Hot Water Heating

DUNHAM

HEATING SYSTEMS AND EQUIPMENT

C. A. DUNHAM CO. LIMITED

140 WENDELL AVE. - TORONTO 15

ST. JOHN'S	MONTREAL	WINNIPEG
HALIFAX	OTTAWA	CALGARY
QUEBEC	TORONTO	EDMONTON
SHERBROOKE	HAMILTON	VANCOUVER

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CCA

C. A. DUNHAM COMPANY LIMITED
140 WENDELL AVE. TORONTO 15, ONTARIO

LIST PRICES

● SUBJECT TO CHANGE WITHOUT NOTICE ● F.O.B. FACTORY ● SALES TAX EXTRA ● TERMS NET 30 DAYS

Dunham Heating Equipment Prices are net to the Consumer who does not regularly employ a maintenance personnel to install heating equipment. These prices are subject to the following discounts:

Heating Contractors

Price Pages dated September 1955 and later 20%

Price Pages dated prior to September 1955 15%

Conditions Of Sale

DISCOUNT: These discounts will apply to all purchases of miscellaneous heating equipment not covered by specific quotations

QUOTATIONS: Subject to change without notice but quotations for a specific list of heating equipment will be open for acceptance for 30 days from date thereof. Quotations covering specific list of heating equipment for individual building projects or stock requirements will be issued on request. Prices quoted will be affected by market conditions, availability of materials and planned production existing at the time quotations are issued.

ORDERS

1. Orders for shipment "when advised" will not be entered for production until releasement is received.
2. Cancellation charges will be made if orders are completed or in production.

GUARANTEE

(a) New parts to replace defective material or workmanship will be furnished for a period of one year from date of shipment.
(b) Replacement parts shall be F.O.B. Toronto and subject to inspection
(c) (Replacement of component parts not of our manufacture, will be limited to the warranty of the manufacturer of such parts.
(d) This guarantee does not include any labor charges for re - placement parts, adjustments, repairs or any work done.

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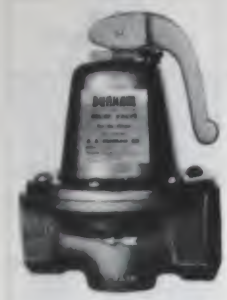
SPECIALTIES SECTION

PRESSURE RELIEF & REDUCING VALVES

File No. 1555

Types V21A, V22A, V23A Dual Unit

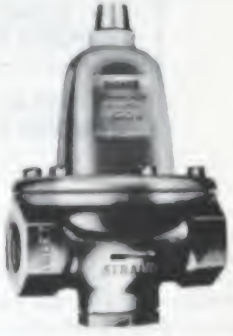


Pressure Relief Valve V21A4

Pressure Reducing Valve V22A4

Dual Unit Pressure Relief and Reducing Valve V23A4

Pressure Relief Valve V21A5



Pressure Reducing Valve V22A5

APPLICATION

Dunham V21A Relief Valves dependably protect hot water heating systems from excess pressure. Any pressure in excess of 30 PSI lifts the extra large diaphragm to relieve the system.

Dunham V22A Pressure Reducing Valves keep hot water heating systems properly filled with water by automatically maintaining a minimum pressure of 12 PSI. Any drop in pressure below 12 PSI causes this valve to open and feed water into the system.

Dunham V23A Dunham Combination Valves are dual units made up of the V21A Relief Valve and V22A Pressure Reducing Valve. These units are shipped completely assembled and ready for installation.

FEATURES

DUNHAM V21A RELIEF VALVE

RUGGED CONSTRUCTION—Body is made of heavy cast iron—all working parts of corrosion-proof brass. Ground and polished metal-to-metal seats are used—no tight fitting guides on discharge side to jam or stick. Extra large diaphragm areas. Relief Valve opens at 30 PSI and is non-adjustable.

CONVENIENT TESTING LEVER—Easily operated lever on Dunham Relief Valves permits testing and occasional flushing.

DUNHAM V22A PRESSURE REDUCING VALVE

RUGGED CONSTRUCTION—Body is made of heavy cast iron—all working parts of corrosion-proof brass. Built in strainer, at inlet side, guards against pipe scale and dirt. It can be easily removed for cleaning. Extra large diaphragm areas.

QUIET OPERATION—Special composition disc seats on stainless steel. This eliminates chattering and helps provide noiseless operation.

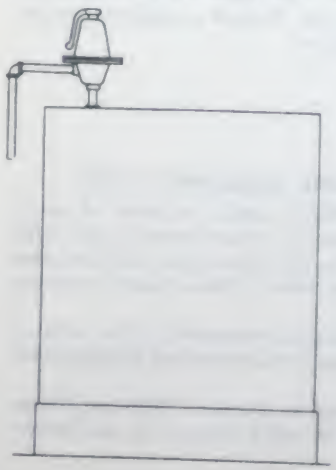
EASY TO ADJUST—Dunham Pressure Reducing Valves are set at 12 lbs.; but can be easily adjusted to meet different building heights.

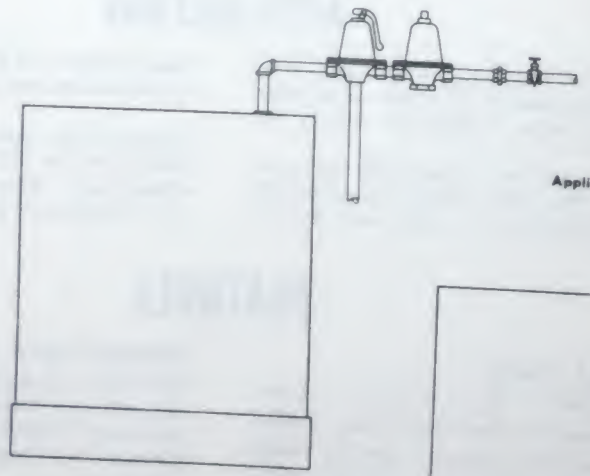
SPECIFICATIONS AND WEIGHTS

CAT. NO.	SIZE	SETTING	APPROX. SHIPPING WEIGHT
V23A4 DUAL UNIT	½"	RELIEF VALVE—30 LBS. REDUCING VALVE—12 LBS.	5½ LBS.
V21A4 RELIEF VALVE	½"	30 LBS.	2¾ LBS.
V21A5 RELIEF VALVE	¾"	30 LBS.	4 LBS.
V22A4 REDUCING VALVE	½"	12 LBS.	3 LBS.
V22A5 REDUCING VALVE	¾"	12 LBS.	3¼ LBS.

TYPICAL INSTALLATIONS

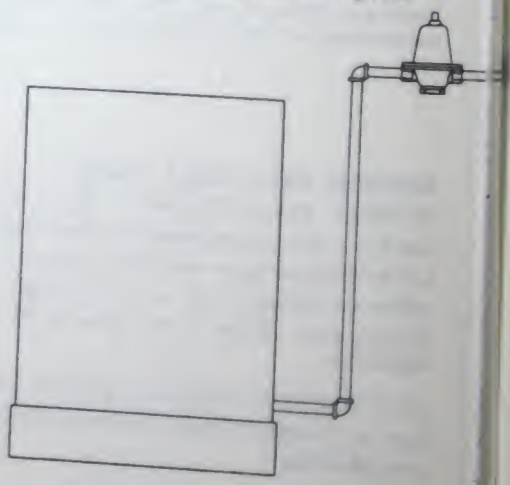
Application of V21A Relief Valve





Application of V23A Dual Unit Relief and Reducing Valve

Application of V22A Reducing Valve



C. A. DUNHAM CO., LTD.,
TORONTO, ONTARIO.
Printed in Canada

SPECIALTIES SECTION

File No. 1557

AUTOMATIC AIR VENTS

Expansion Type V19A, Float Type V20A

Dunham Float Type V20A Air Vent

Dunham Expansion Type V19A Air Vent

APPLICATION

Dunham V19 Air Vents automatically vent air from convectors, baseboard, finned pipe, cast iron radiation and from the high points of mains or branches in hot water heating systems. Maximum water pressure is 50 PSI.

Dunham V20 Air Vents continuously and automatically vent air from hot water mains, unit heaters, radiant panels, down feed systems and cold water lines where the operating pressure does not exceed 35 PSI.

FEATURES

DUNHAM V-19 AIR VENT

INGENIOUS DESIGN AND CONSTRUCTION—Dunham V19 expansion type Air Vents are designed so that nothing can get out of working order! After the system is filled, the special hygroscopic discs become wet and expand, sealing the venting ports. As trapped air collects, the discs dry out and contract, opening the venting ports. This allows the trapped air to escape. Vent can be installed vertically or horizontally; but never upside down. These air vents have non-rusting, all-brass parts. ⅛" pipe thread connection.

NO ADJUSTMENT NEEDED—After the disc body and cap have been initially seated, no further adjustments are ever needed.

MANUAL VENTING—When the heating system is first being filled, the disc body on these vents can be turned counter-clockwise ¾ of a turn to permit rapid air removal.

EASY TO SERVICE—To replace discs in the Dunham V19 Air Vent, it is not necessary to drain the system. As the disc body is unscrewed, an integral ball check valve closes the opening. The discs can then be replaced without the necessity of draining the system.

MANUAL SHUT-OFF—Removing the disc body and permitting the ball check valve to seat, also acts as a manual shut-off.

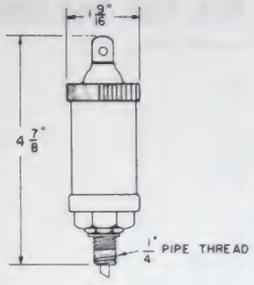
DUNHAM V-20 AIR VENT

BUILT-IN SYPHON—With the Dunham V20 Float type Air Vent, it is not necessary to add a drain tube. Built-in syphon prevents "spitting". In unusual installations, where excessive moisture in the discharged air must be drained away, ¼" drain tube connection for this vent can be furnished on order at extra cost.

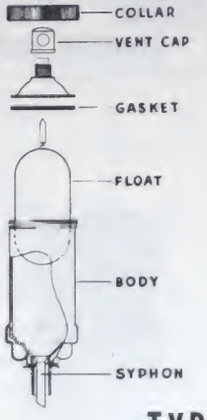
EASY TO SERVICE—Typical of all Dunham products the V20 Air Vent is easy to service. It can be completely disassembled quickly and easily for routine cleaning. If dirt or cleaning compound gets between the float pin and seat, the valve cap can be tightened to stop any water leakage until convenient to remove the valve.

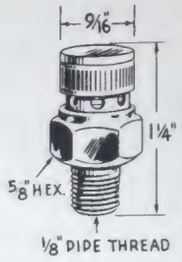
SIMPLICITY OF PIPING—All parts of non-rusting heavy brass. The body is fitted with a male nipple thread ¼" IPS. No extra fittings required. If a drain tube is desired, the top is threaded for a ⅛" connection.

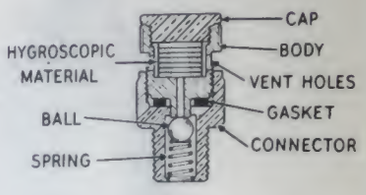
ROUGHING-IN DIMENSIONS



V20A Air Vent

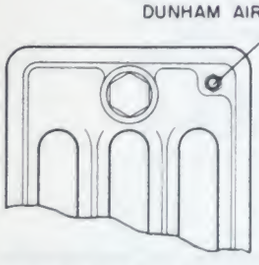




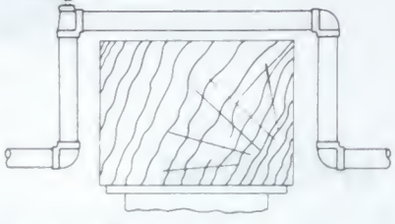


V19A Air Vent

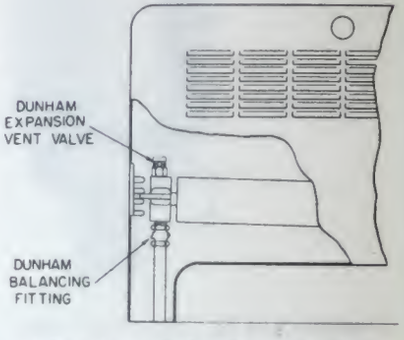
TYPICAL INSTALLATIONS



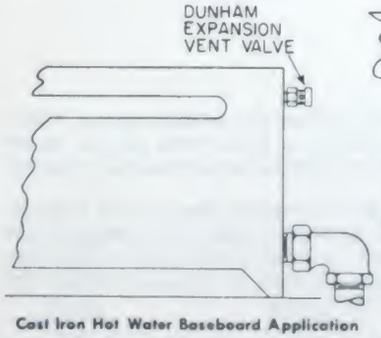
Standing Hot Water Radiation Application



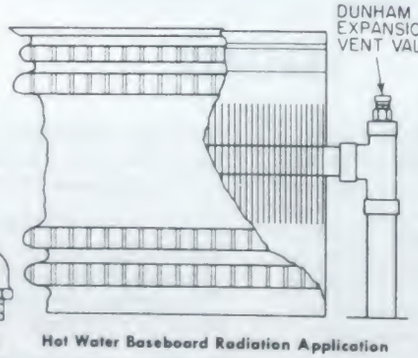
Venting High Points, Hot Water Application



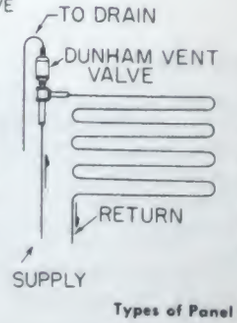
Hot Water Convector Radiation Application

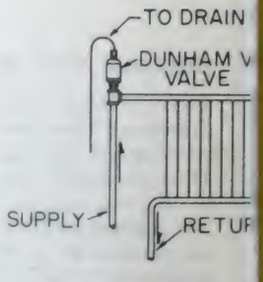


Cast Iron Hot Water Baseboard Application

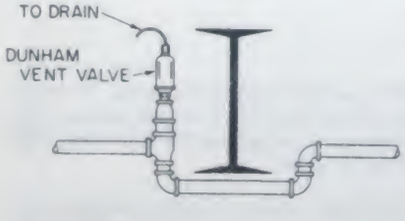


Hot Water Baseboard Radiation Application

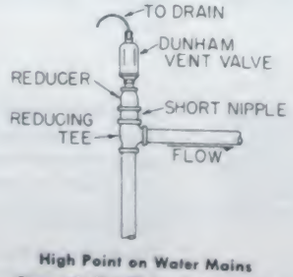




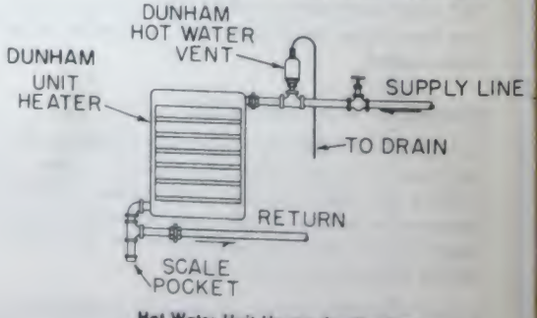
Types of Panel Coils—Walls Application



Trapped Mains or Circulating Pipes Application



High Point on Water Mains
Domestic Hot Water Application



Hot Water Unit Heater Application

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TORONTO, ONTARIO.
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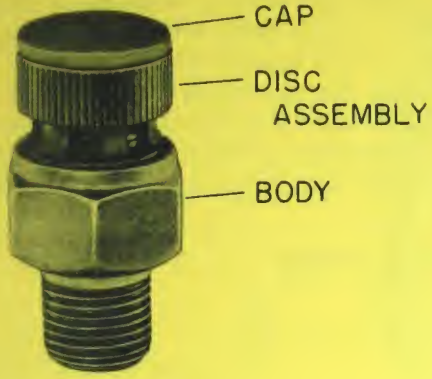
DUNHAM **INSTALLATION INSTRUCTIONS**

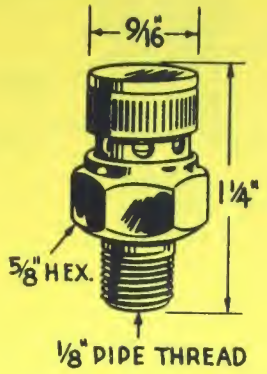
SPECIALTIES SECTION

File No. 3551

AUTOMATIC AIR VENT

Model V19A1 Expansion Type

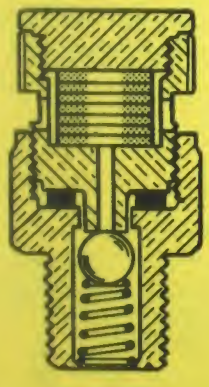




HOW TO INSTALL

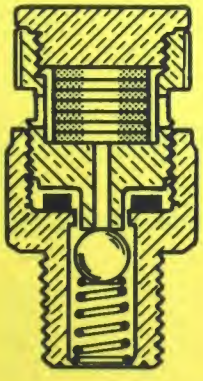
The Dunham No. V19A Automatic Vent is designed for use on hot water systems. Hygroscopic fiber discs automatically open to vent air and to close against water. The No. V19A Vent is designed to operate at a maximum water pressure of 50 p.s.i. The following diagrams tell the story of how the Dunham No. V19A Vent operates.

AUTOMATIC VENTING



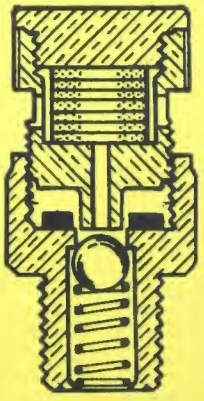
Max. Operating Pressure 50 lbs. Screw disc assembly into body until it seats on gasket. Serrations on end of stem allow air to pass ball check and vent automatically through discs. Install valve horizontally or vertically, never inverted.

MANUAL VENTING



For Initial Venting Of Installation. To vent system manually, unscrew disc assembly exactly 3/4 of a turn. This permits the air to flow past the ball check and gasket, and out through the threads.

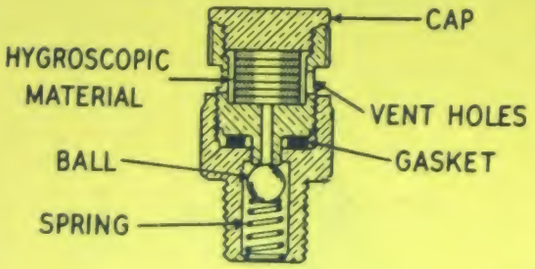
MANUAL SHUT OFF



To change valve from automatic venting to manual shut off, unscrew disc assembly two or more complete turns. This allows ball check to seat in body and prevents passage of air or water.

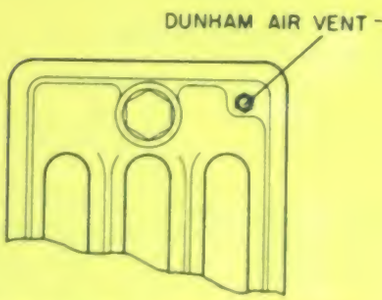
DUNHAM INSTALLATION INSTRUCTIONS

SERVICING - CLEANING

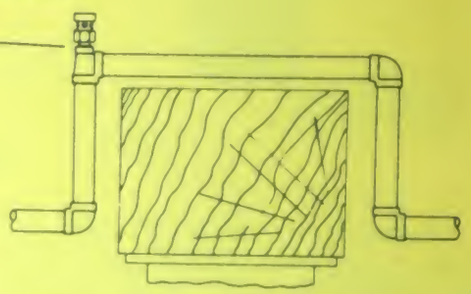


The Dunham No. V19A can be taken apart and cleaned or fiber discs replaced without draining the system, should leak-sealing compounds or high mineral content of the water require it. Simply unscrew the cap from the body and remove the 7 Hygroscopic Discs. The ball check in the base is firmly held by a spring against the seat in the base, thus preventing leakage of water. Replace Cap and Discs, and the Valve is again ready for operation.

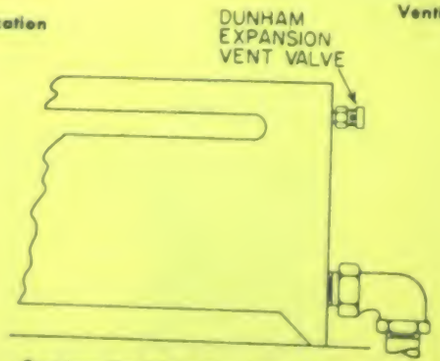
TYPICAL INSTALLATION



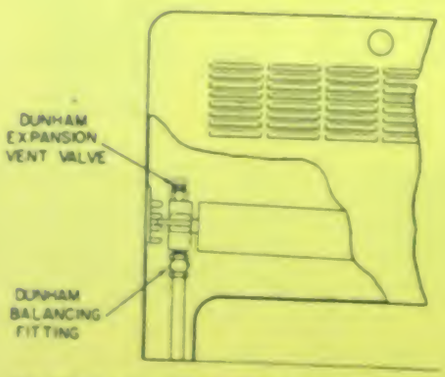
Standing Hot Water Radiation Application



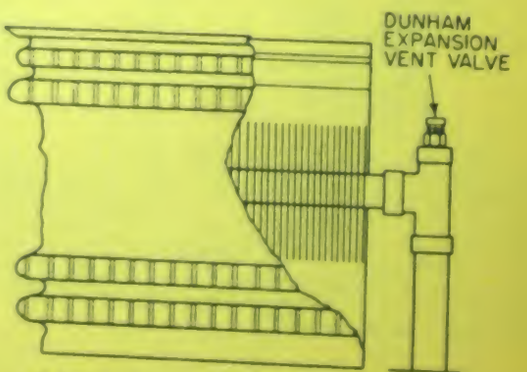
Venting High Points, Hot Water Application



Cast Iron Hot Water Baseboard Application



Hot Water Convector Radiation Application



Hot Water Baseboard Radiation Application

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TORONTO, ONTARIO.
Printed in Canada

DUNHAM **INSTALLATION INSTRUCTIONS**

SPECIALTIES SECTION

AUTOMATIC AIR VENT

File No. 3552

Model V20A Float Type

HOW TO INSTALL

loat Type vents have advantages over Expansion ypes in that they will handle large quantities of ir continuously. This makes them particularly de- irable for use on mains and industrial equipment.

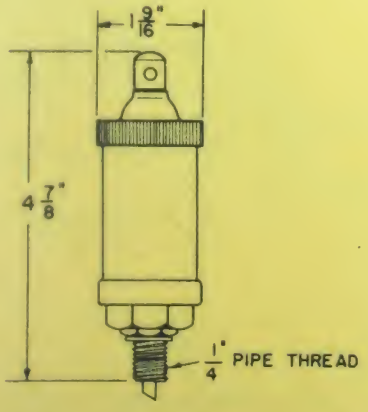
20A Float Vents should always be installed in a ertical position. No air chamber is required. For ressures not exceeding 35 p.s.i.

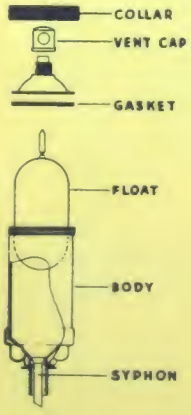
AUTOMATIC VENTING--Unscrew the vent cap two turns counter-clockwise.

MANUAL SHUT-OFF--Tighten the vent cap by screwing clockwise.

DRAIN CONNECTION--Where the Float Vent is to be installed in an inaccessible or concealed position, it is advisable to replace the vent cap with a ¼" copper tube connector for safety drain connection.

SERVICING - CLEANING



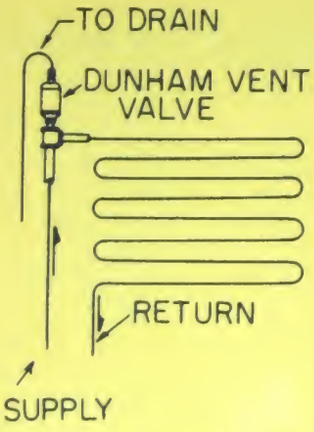


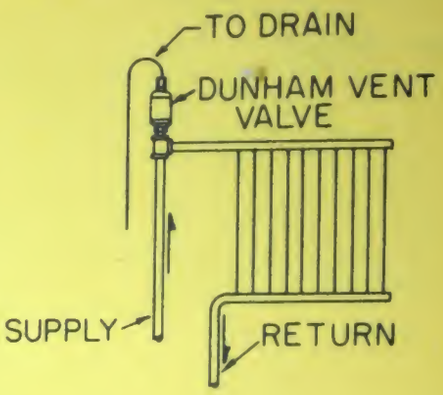
he V20A Float Vent may be cleaned of sediment, cale or foreign material in the field simply by unscrewing the collar. All parts are then readily accessible for service.

File No. 3552
Jan./55

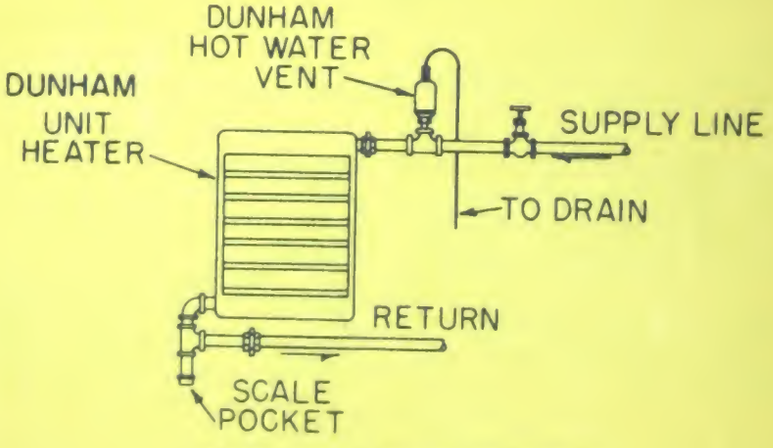
DUNHAM INSTALLATION INSTRUCTIONS

TYPICAL INSTALLATIONS

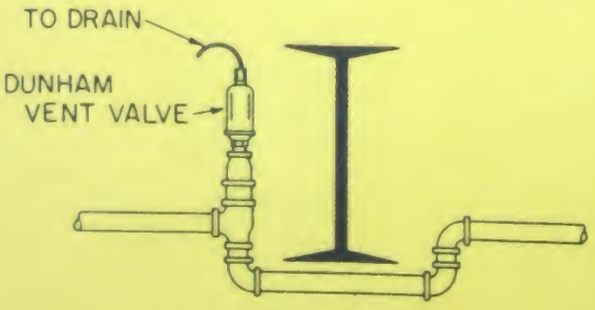




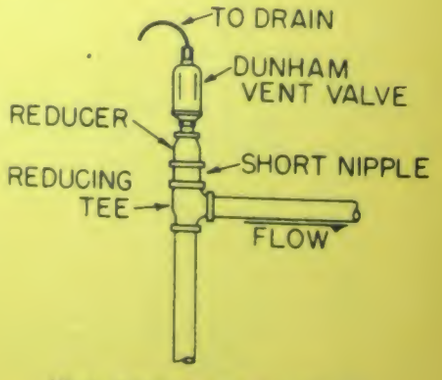
Types of Panel Coils—Wall Applications



Hot Water Unit Heater Application



Trapped Mains or Circulating Pipe Application



High Point on Water Mains Domestic Hot Water Application

C. A. DUNHAM CO., LTD.,
TORONTO, ONTARIO.
Printed in Canada

SPECIALTIES SECTION

File No. 1559

HOT WATER CIRCULATOR VALVES

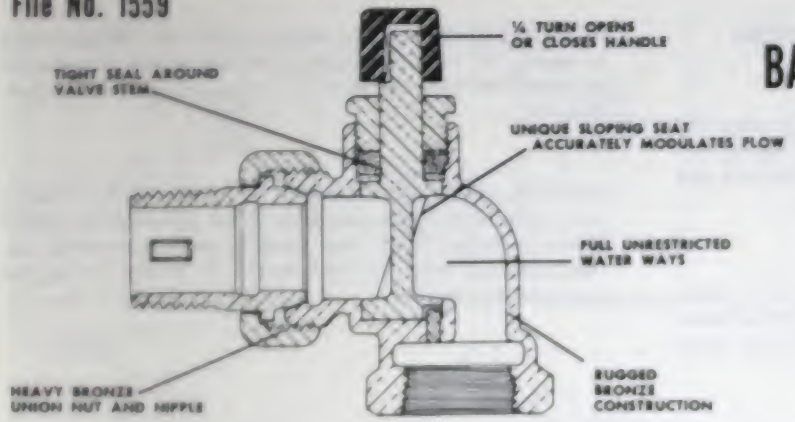
Types V24, 25, 26, 27, 28, 29

BALANCING ELBOWS—FITTINGS

Types F15, 16, 17, 18, 19, 20, 21

VENT TEES

Types T7, 8, 9



Angle Pattern Circulator Valve

Straight-Way Circulator Valve

Vent Tee

Balancing Elbow

Balancing Fitting

APPLICATION

Dunham Circulator Valves are applicable to all types of forced water heating or cooling systems where tight shut-off is not required. They provide instant on or off control of water flow to any type of heating element used in baseboard, convectors or radiators.

Dunham Balancing Elbows and Fittings are used to balance the water flow in forced water heating or cooling systems. After adjusting the fitting, each radiator or radiant pipe coil receives the correct flow of hot water for even heat regardless of location.

Dunham Vent Tees are applicable to all types of forced hot water systems. They simplify and cut the installation time of piping to all finned tube radiation or wherever an air vent is required at the high points of all vertical changes in flow of mains or branches.

Dunham Union Elbows and Connectors are applicable to all types of low pressure steam and hot water systems.

FEATURES

DUNHAM BALANCING ELBOWS AND FITTINGS

PRECISION MANUFACTURE—Dunham Balancing Fittings are constructed from precision machined, rugged, corrosion proof bronze castings. Heavy bronze union nut and nipple built to withstand severe wrench strain.

TIGHT SEAL AROUND VALVE STEM—Heavy packing nut exerts pressure on a solid one-piece graphited asbestos packing ring providing a tight seal around the valve stem.

SIMPLIFIED DESIGN—Here again the highly important free waterflow area is larger than in any other water heating or cooling balancing fitting. This full unrestricted waterway reduces water friction and pump load. A simple screw driver slot,which is provided for fast, easy adjustment, indicates position of butterfly. Adjustment can be made without draining the system.

MODULATED CONTROL—The valve body is fitted with a sloping seat which provides a V-shaped opening to modulate the percentage of flow through the valve far more accurately than the usual type of vertical seat. This provides graduated balance control from full open to any degree of closure.

FULL LINE—In both elbows and fittings, F18 and 15 have threaded connections both inlet and outlet, F21 and 17 has sweat inlet connections and threaded outlet connection, F16 and 20 has sweat to sweat connections.

DUNHAM VENT TEES

SIMPLE, RUGGED CONSTRUCTION—Dunham Vent Tees are constructed from precision machined bronze castings. Reduction sizes eliminate the need for reducing bushings. Ready tapped 1/8" air vent opening in return fitting eliminates need for bushing or drilling and tapping. Use the Type V19A1 Dunham hygroscopic air vent.

FULL LINE—T9 have threaded connections, T7 has thread to sweat. 1/8" vent tapping is threaded on all patterns for automatic air vent connections, T8 has sweat to sweat connections.

SIMPLE, RUGGED CONSTRUCTION—Union Elbows and Connectors are constructed from precision machined bronze castings. Clean, true threads insure quick aligning. Heavy bronze union nut and nipple are built to withstand severe wrench strain.

DUNHAM CIRCULATOR VALVES

SIMPLE, RUGGED CONSTRUCTION—Dunham Circulator Valves are constructed from precision machined bronze castings. Heavy bronze union nut and nipple built to withstand severe wrench strain.

TIGHT SEAL AROUND VALVE STEM—Heavy packing nut exerts pressure on a solid one-piece graphited asbestos packing ring providing a tight seal around the valve stem.

FUNCTIONAL DESIGN AND STYLING—Dunham Valves free waterflow area is larger than any other hot water valve. This means full unrestricted waterways that reduce water friction and pump load. New T-type handle indicates position of butterfly, provides a sure hand grip and with only a quarter turn is fully opened or closed. Valves are self-cleaning of all sediment. To prevent freezing—these valves, when closed, allow a pre-determined minimum amount of water leakage around the entire butterfly. External dimensions of valves allow concealed installation in either convectors, baseboard, Fin-Vector or exposed installation with cast iron radiation.

FULL LINE—V25 and 27 valves have threaded connections both inlet and outlet, V24 and 28 valves have sweat inlet connection and threaded outlet, V26 and 29 valves have sweat to sweat connections.

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DIMENSIONS, BALANCING ELBOWS—FITTINGS

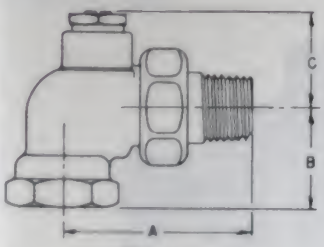

Fig. 1
Thread to Thread Connections

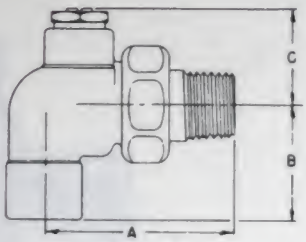

Fig. 2
Thread to Sweat Connections

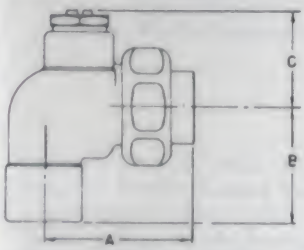

Fig. 3
Sweat to Sweat Connections

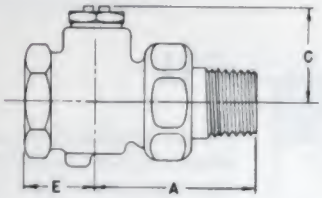

Fig. 4
Thread to Thread Connections

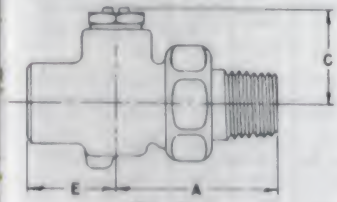

Fig. 5
Thread to Sweat Connections

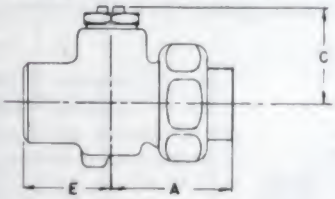

Fig. 6
Sweat to Sweat Connections

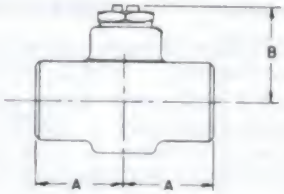

Fig. 7
Sweat to Sweat Connections

FIG. NO.	CAT. NO.	SIZE	DIMENSIONS IN INCHES A	B	C	E
1	F15A4	½	2 11/16	1 11/32	1 9/32	
	F15A5	¾	2 23/32	1 7/16	1 3/8	
	F15A6	1	3 3/32	1 11/16	1 1/2	
2	F17A4	½	2 11/16	1 3/4	1 9/32	
	F17A5	¾	2 23/32	1 21/32	1 3/8	
3	F16A4	½	1 13/16	1 5/16	1 9/32	
	F16A5	¾	2 3/32	1 21/32	1 3/8	
4	F18A4	½	2 3/16		1 9/32	31/32
	F18A5	¾	2 11/32		1 3/8	1 1/32
	F18A6	1	2 13/32		1 1/2	1 7/32
5	F21A4	½	2 3/16		1 9/32	31/32
	F21A5	¾	2 11/16		1 3/8	1 9/32
6	F20A4	½	1 7/16		1 9/32	31/32
	F20A5	¾	1 23/32		1 3/8	1 9/32
7	F19A3	⅜	2 7/32	1 9/32		
	F19A4	½	31/32	1 9/32		
	F19A5	¾	1 9/32	1 3/8		
	F19A4C	½ x ⅜	31/32	1 9/32		

DIMENSIONS, VENT TEES

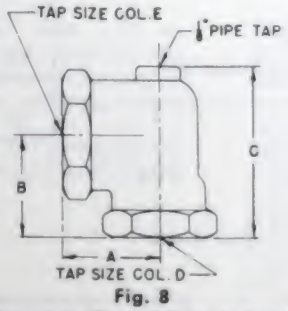

Fig. 8
Thread to Thread Connections

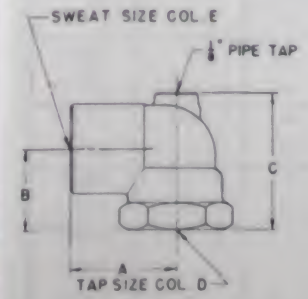

Fig. 9
Thread to Sweat Connections

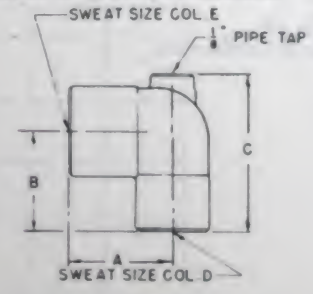

Fig. 10
Sweat to Sweat Connections

FIG. NO.	CAT. NO.	SIZE	DIMENSIONS IN INCHES A	B	C	PIPE TAP SIZE D	E
8	T9A4A6	½x1	1 ¼	1 7/16	2 13/32	½	1
	T9A5A6	¾x1	1 3/8	1 13/32	2 7/16	¾	1
	T9A6A6	1 x1	1 ½	1 ½	2 13/32	1	1
	T9A5A7	¾x1 ¼	1 7/16	1 13/32	2 23/32	¾	1 ¼
	T9A6A7	1 x1 ¼	1 9/16	1 5/8	2 ¾	1	1 ¼
	T9A7A7	1 ¼x1 ¼	1 11/16	1 11/16	2 13/16	1 ¼	1 ¼
FIG. NO.	CAT. NO.	SIZE	A	B	C	PIPE SIZE	SWEAT SIZE
9	T7A4A6	½x1	1 13/32	1 3/32	2	½	1
	T7A5A6	¾x1	1 13/32	1 5/32	2	¾	1
	T7A5A7	¾x1 ¼	1 23/32	1 9/32	2 ¼	¾	1 ¼
	T7A6A7	1 x1 ¼	1 27/32	1 13/32	2 3/8	1	1 ¼
FIG. NO.	CAT. NO.	SIZE	A	B	C	SWEAT SIZE	
10	T8A4A5	½x ⅜	1 3/16	1 ¼	1 13/32	½	⅜
	T8A5A5	¾x ⅜	1 5/16	1 5/16	2 1/32	¾	⅜
	T8A4A6	½x1	1 3/8	1 3/16	2 1/32	½	1
	T8A5A6	¾x1	1 ½	1 7/16	2 9/32	¾	1
	T8A6A6	1 x1	1 5/8	1 5/8	2 13/32	1	1

File No. 1339
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DIMENSIONS, CIRCULATOR VALVES

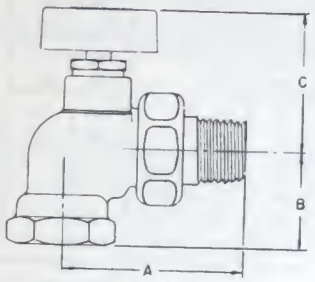

Fig. 11
Thread to Thread Connections

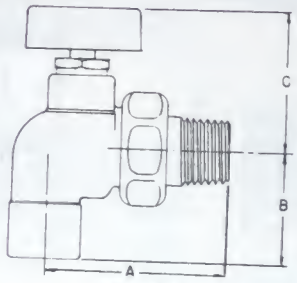

Fig. 12
Thread to Sweat Connections

Fig. 13
Sweat to Sweat Connections

Fig. 14
Thread to Thread Connections

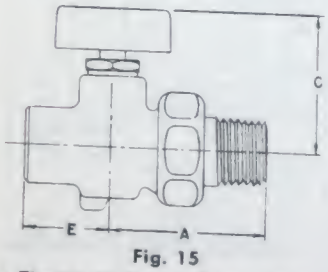

Fig. 15
Thread to Sweat Connections

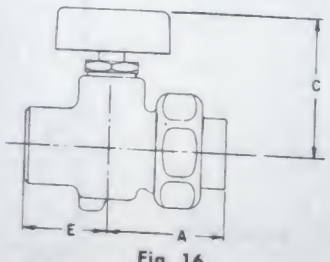

Fig. 16
Sweat to Sweat Connections

FIG. NO.	CAT. NO.	SIZE	DIMENSIONS IN INCHES A	B	C	E
11	V27A4	½	2 11/16	1 11/32	1 31/32	
	V27A5	¾	2 27/32	1 3/16	2 1/16	
	V27A6	1	3 3/32	1 11/16	2 3/16	
12	V28A4	½	2 11/16	1 3/16	1 31/32	
	V28A5	¾	2 27/32	1 31/32	2 1/16	
13	V29A4	½	1 15/16	1 3/16	1 31/32	
	V29A5	¾	2 7/32	1 31/32	2 1/16	
14	V25A4	½	2 3/16		1 31/32	31/32
	V25A5	¾	2 11/32		2 1/16	1 1/32
	V25A6	1	2 13/16		2 3/16	1 7/32
15	V24A4	½	2 3/16		1 31/32	31/32
	V24A5	¾	2 11/16		2 1/16	1 9/32
16	V26A4	½	1 7/8		1 31/32	31/32
	V26A5	¾	1 23/32		2 1/16	1 9/32

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SPECIALTIES SECTION

File No. 1561

FLOW DIVERTOR FITTINGS

Types F5A, F6A

Flow Divertor Fitting with Sweat to Sweat Connections

Flow Divertor Fitting with Thread to Thread Connections

APPLICATION

Dunham Flow Divertor Fittings are applicable to all one-pipe Hot Water Heating Systems. They are used to assure a proper flow of hot water through convectors, baseboard or other types of radiation installed as separate units regardless of location. Only one fitting usually is required for each unit of radiation. This should be installed on the return connection to the main, whether the main is below or above the heating unit.

The Dunham Flow Divertor Fitting is scientifically sized to provide the right resistance to flow through the main. This, in conjunction with the induced flow caused by the nozzle action of the fitting in the return connection, will balance the greatest resistance encountered in the by-pass through the radiation unit of the largest size which can be fed by the size of pipe of the by-pass.

Only unusual circumstances require two fittings for the same by-pass. But it is usually advisable to use a Dunham Balancing Fitting for the radiation unit in the by-pass to balance the system.

Where unit heaters comprise a part of or all the heating units in the system, it is recommended that they be installed on a two-pipe circuit rather than a one-pipe circuit. This is because the high pressure drop through the unit and the large quantities of water involved exceed the diverting capacities of standard size Dunham Flow Divertor Fittings.

FEATURES

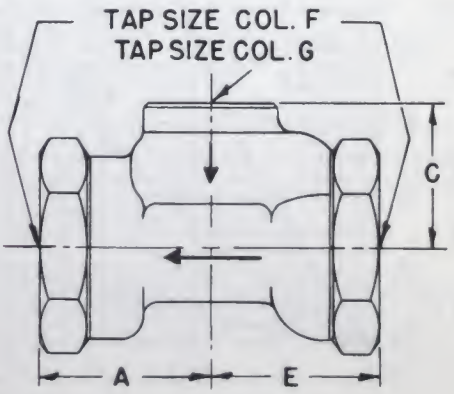
LOW COST—Installation costs are cut, since only one fitting (on the return) need be used with each radiation unit, whether above or below the main. The same fitting may be reversed and used as a supply fitting in exceptional cases.

SOUND ENGINEERING—Dunham's fifty years of engineering experience in designing, perfecting and building top quality heating systems and equipment presently heating buildings of all types, sizes and ages, stands behind the development of this hot water Flow Divertor Fitting.

ALL BRONZE CONSTRUCTION—The one-piece, precision machined bronze casting assures long life, positive alignment and proper sizing.

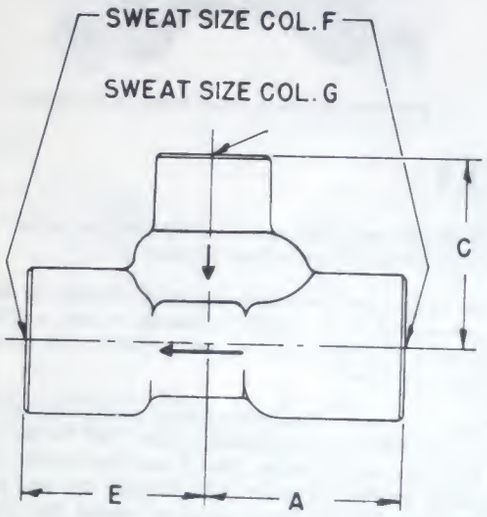
DIMENSIONS

CAT. NO.	SIZE	DIMENSIONS IN INCHES PIPE TAP SIZE				
		A	C	E	F	G
F5A6F4	1 x ½	1½	1¼	1½	1	½
F5A6F5	1 x ¾	1½	1⅝	1½	1	¾
F5A7G4	1¼ x ½	1 23/32	1⅞	1 23/32	1¼	½
F5A7G5	1¼ x ¾	1 23/32	1½	1 23/32	1¼	¾
F5A8H4	1½ x ½	1⅞	1⅝	1⅞	1½	½
F5A8H5	1½ x ¾	1⅞	1⅝	1⅞	1½	¾
F5A9J4	2 x ½	2	1¾	2	2	½
F5A9J5	2 x ¾	2	1 13/16	2	2	¾
F5A9J6	2 x 1	2	1 13/16	2	2	1

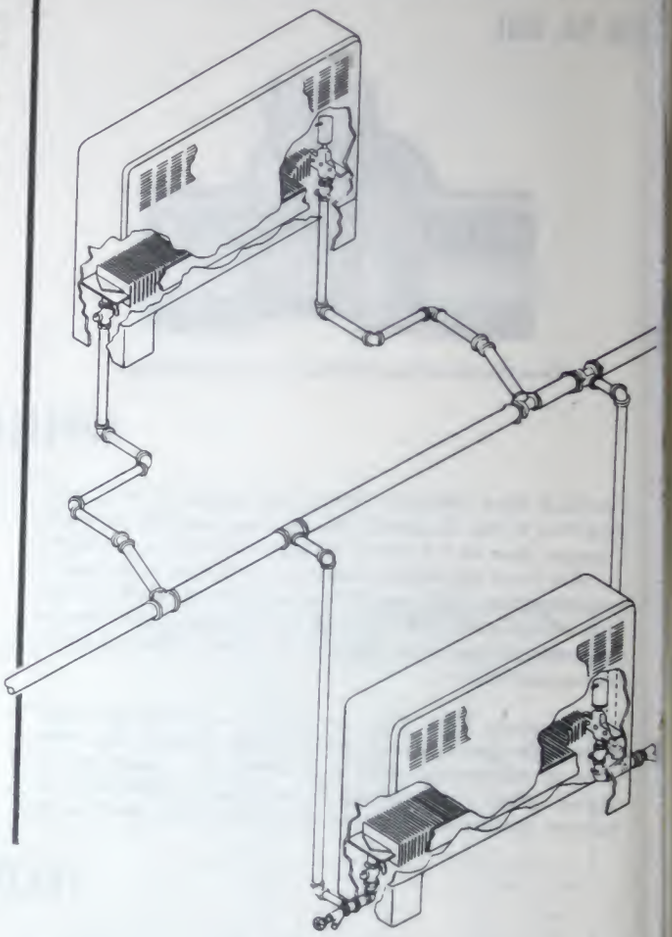


DIMENSIONS

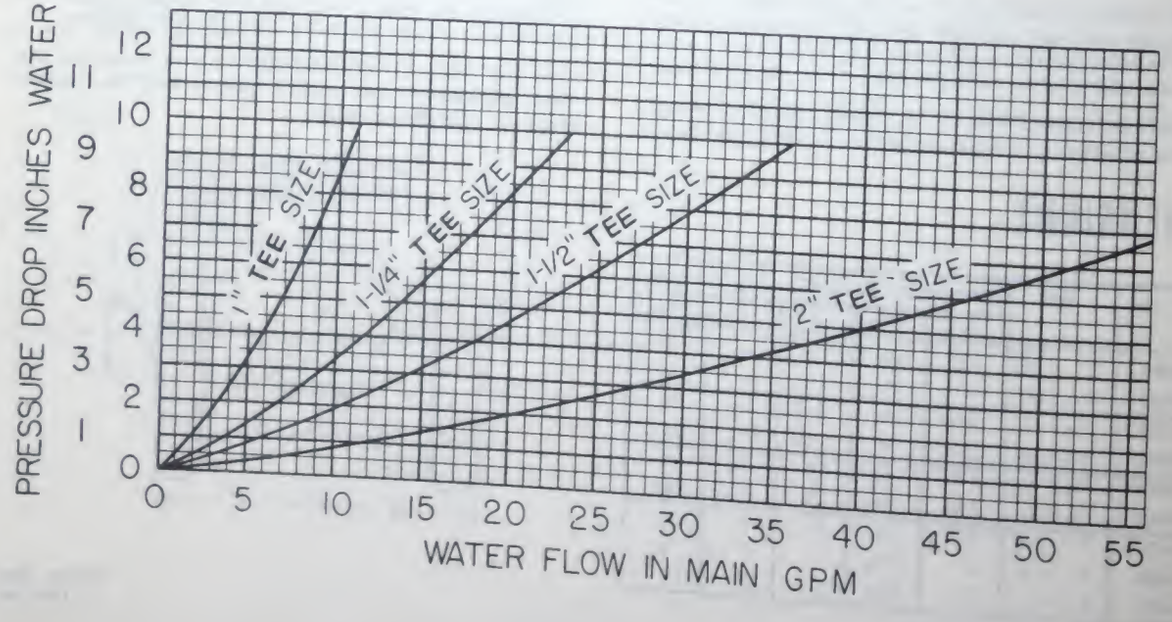
CAT. NO.	SIZE	DIMENSIONS IN INCHES			SWEAT SIZE	
		A	C	E	F	G
F6A5E4	¾ x ½	1⅝	1¾	1⅝	¾	½
F6A6F4	1 x ½	1¹³⁄₁₆	1⅞	1¹⅛	1	½
F6A6F5	1 x ¾	1¹³⁄₁₆	1¹⅛	1¹⅛	1	¾



TYPICAL INSTALLATION



PRESSURE DROP TABLE



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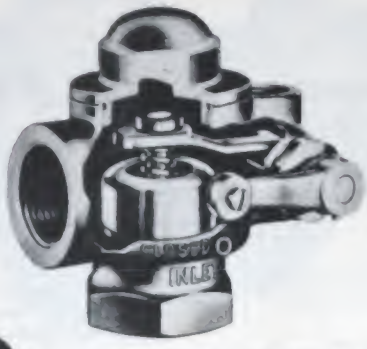
SPECIALTIES SECTION

File No. 1562

FLOW CONTROL VALVES

Types V17A Angle, V18A Horizontal

Dunham Angle Pattern Flow Control Valve



Cut-away View (Interior design of Angle and Horizontal Valves is alike.)

Dunham Horizontal Pattern Flow Control Valve

APPLICATION

Dunham Flow Control Valves prevent the circulation of hot boiler water in forced water heating systems when heat is not required by the building. This means that boiler water can be used at a temperature high enough to heat domestic water both winter and summer without overheating the building. During the heating season, Dunham Flow Control Valves help to maintain a uniform temperature throughout the heating system by preventing gravity flow and temperature over-ride.

FEATURES

SIMPLE, RUGGED CONSTRUCTION—Dunham Flow Control Valves have a heavy cast iron body with all working parts made of non-corrosive bronze. Accurately machined bronze disc has been carefully weighted and micro lapped. Bronze spring cushion is attached to free moving swing arm, which holds disc in closed position unless circulator is running. Interior design of Angle and Horizontal types is identical.

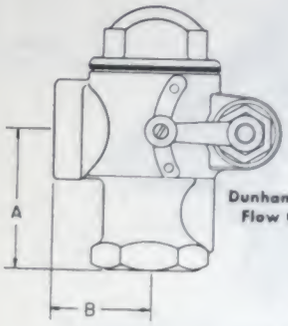
TROUBLE-FREE OPERATION—Dunham Flow Control Valves are completely automatic in operation and do not require adjustment for normal winter or summer operation. When circulator is running, bronze seat disc raises to open valve. When circulator stops, seat disc closes tightly preventing gravity flow. External adjustment arm is easily positioned with a screw driver in "Open", "Normal", or "Closed" station. Flow Control Valve should be set at "Normal" for regular winter or summer operations and at "Open" for gravity circulation or to allow complete draining of system. Valve is shipped "Closed" to prevent damage. Set at "Normal" after installation.

EASY TO MAINTAIN—To clean the bronze disc seat of Dunham Flow Control Valves, merely move the external adjusting arm up and down several times with the circulator running. No breaking of pipe connections or removal

FEATURES

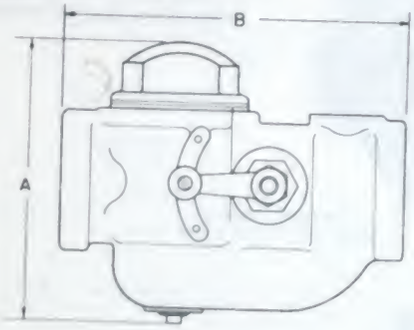
of entire valve mechanism is necessary. All working parts can be easily inspected or serviced by removing top bronze cap.

FULL LINE—A complete line of both angle and horizontal type Dunham Flow Control Valves are available. Angle type from 1" to 2½"; horizontal type from 1" to 3".



Dunham Angle Pattern Flow Control Valve

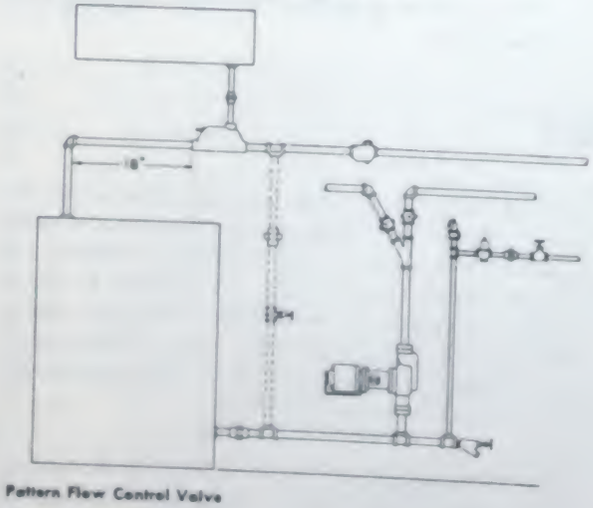
Dunham Horizontal Pattern Flow Control Valve



DIMENSIONS & WEIGHTS

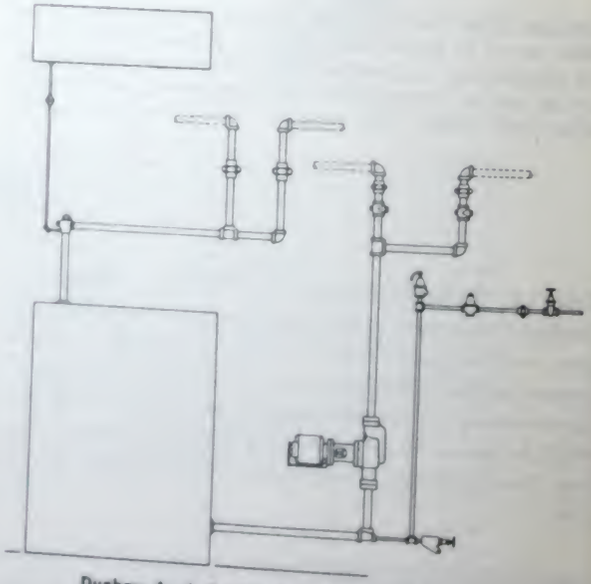
CAT. NO.	TYPE	SIZE	DIMENSIONS IN INCHES A	B	CONNECTIONS INLET	OUTLET	APPROX. SHIPPING WEIGHTS
V17A6	ANGLE	1	2 3/8	1 3/4	SCREWED	SCREWED	3 3/4
V17A7	ANGLE	1 1/4	2	2	SCREWED	SCREWED	3 3/4
V17A8	ANGLE	1 1/2	2 1/2	2 3/4	SCREWED	SCREWED	8 1/4
V17A9	ANGLE	2	4 3/4	4 3/4	FLANGED	FLANGED	21 1/2
V17A10	ANGLE	2 1/2	4 3/4	4 3/4	FLANGED	FLANGED	21 1/2
V18A6	HORIZONTAL	1	4 13/16	5 13/16	SCREWED	SCREWED	5 1/2
V18A7	HORIZONTAL	1 1/4	4 13/16	5 13/16	SCREWED	SCREWED	5 1/2
V18A8	HORIZONTAL	1 1/2	5 3/8	7 1/4	SCREWED	SCREWED	12
V18A9	HORIZONTAL	2	7	10 1/2	FLANGED	FLANGED	30
V18A10	HORIZONTAL	2 1/2	7	10 1/2	FLANGED	FLANGED	30
V18A11	HORIZONTAL	3	6 1/8	12 1/8	FLANGED	FLANGED	38

TYPICAL INSTALLATIONS



Pattern Flow Control Valve

Dunham Horizontal



Dunham Angle Pattern Flow Control Valve

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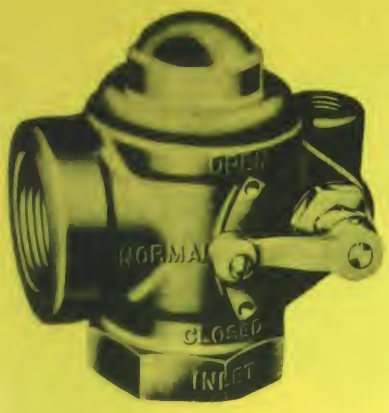
DUNHAM **INSTALLATION INSTRUCTIONS**

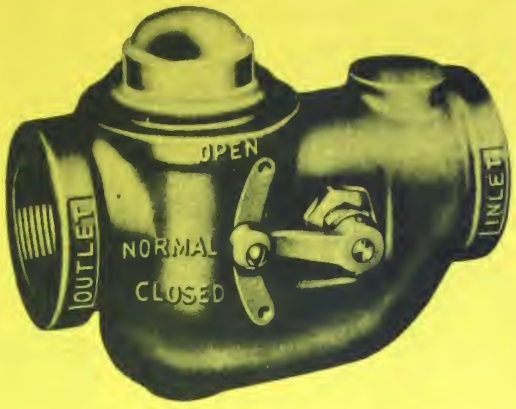
SPECIALTIES SECTION

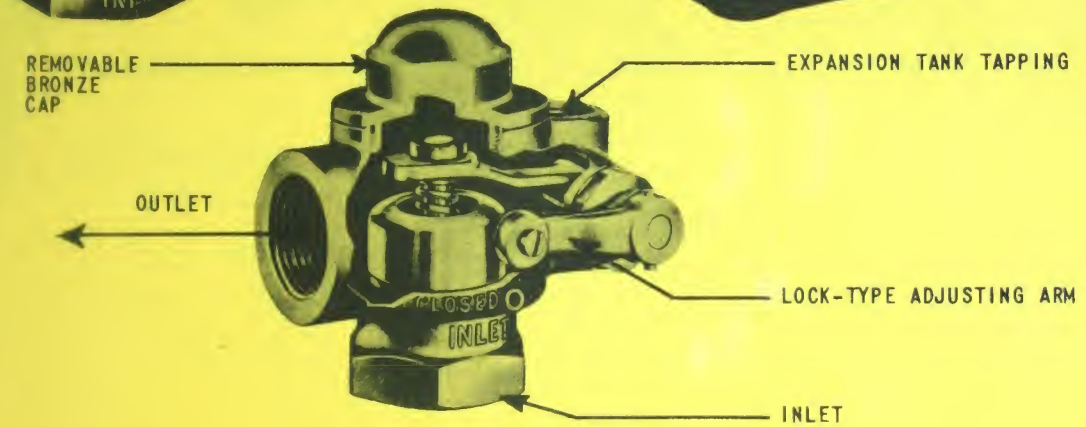
File No. 3553

FLOW CONTROL VALVE

Angle and Horizontal Types





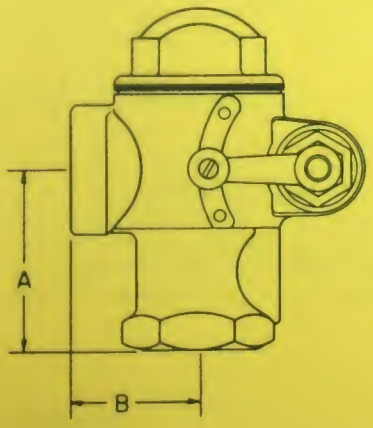


HOW TO INSTALL

Dunham Flow Control Valves are shipped with the Adjusting Arm secured in the position marked CLOSED on the Valve body. This assures the Flow Control Valve arriving on the job with the seat in a clean condition. After installation, this arm should be reset and secured in the position marked NORMAL.

If hot water flows to radiation when the circulator is not running it indicates dirt on the seat of the Flow Control Valve. To correct this condition, start the circulator and move the adjusting arm on the Flow Control Valve up and down several times to wash off in most cases any dirt on the seat.

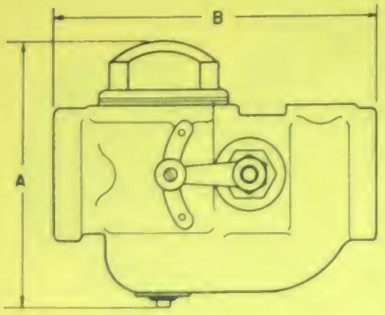
ROUGHING IN DIMENSIONS



CAT. NO.	TYPE	SIZE	DIMENSIONS IN INCHES		CONNECTIONS		APPROX. SHIPPING WEIGHTS
			A	B	INLET	OUTLET	
V17A6	ANGLE	1	2 3/8	1 3/4	SCREWED	SCREWED	3 3/4
V17A7	ANGLE	1 1/4	2	2	SCREWED	SCREWED	3 3/4
V17A8	ANGLE	1 1/2	2 1/2	2 3/8	SCREWED	SCREWED	8 1/4
V17A9	ANGLE	2	4 3/4	4 3/4	FLANGED	FLANGED	21 1/2
V17A10	ANGLE	2 1/2	4 3/4	4 3/4	FLANGED	FLANGED	21 1/2

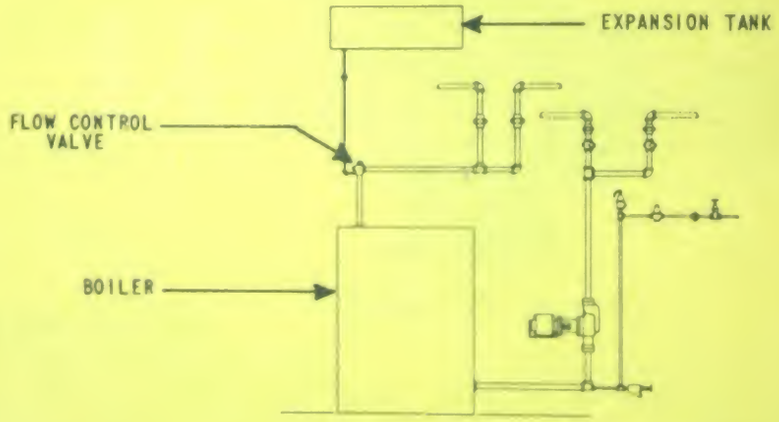
DUNHAM INSTALLATION INSTRUCTIONS

ROUGHING IN DIMENSIONS

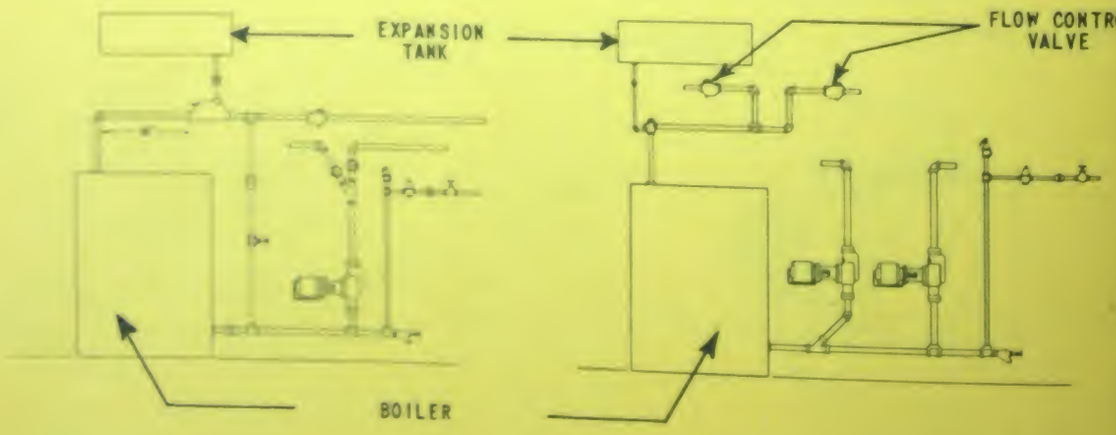


CAT. NO.	TYPE	SIZE	DIMENSIONS IN INCHES		CONNECTIONS		APPROX. SHIPPING WEIGHTS
			A	B	INLET	OUTLET	
V18A6	HORIZONTAL	1	4 13/16	5 15/16	SCREWED	SCREWED	5 1/2
V18A7	HORIZONTAL	1 1/4	4 13/16	5 15/16	SCREWED	SCREWED	5 1/2
V18A8	HORIZONTAL	1 1/2	5 3/8	7 1/4	SCREWED	SCREWED	12
V18A9	HORIZONTAL	2	7	10 1/2	FLANGED	FLANGED	30
V18A10	HORIZONTAL	2 1/2	7	10 1/2	FLANGED	FLANGED	30
V18A11	HORIZONTAL	3	6 5/8	12 1/8	FLANGED	FLANGED	38

TYPICAL INSTALLATION (Angle Type)



TYPICAL INSTALLATION (Horizontal Types)



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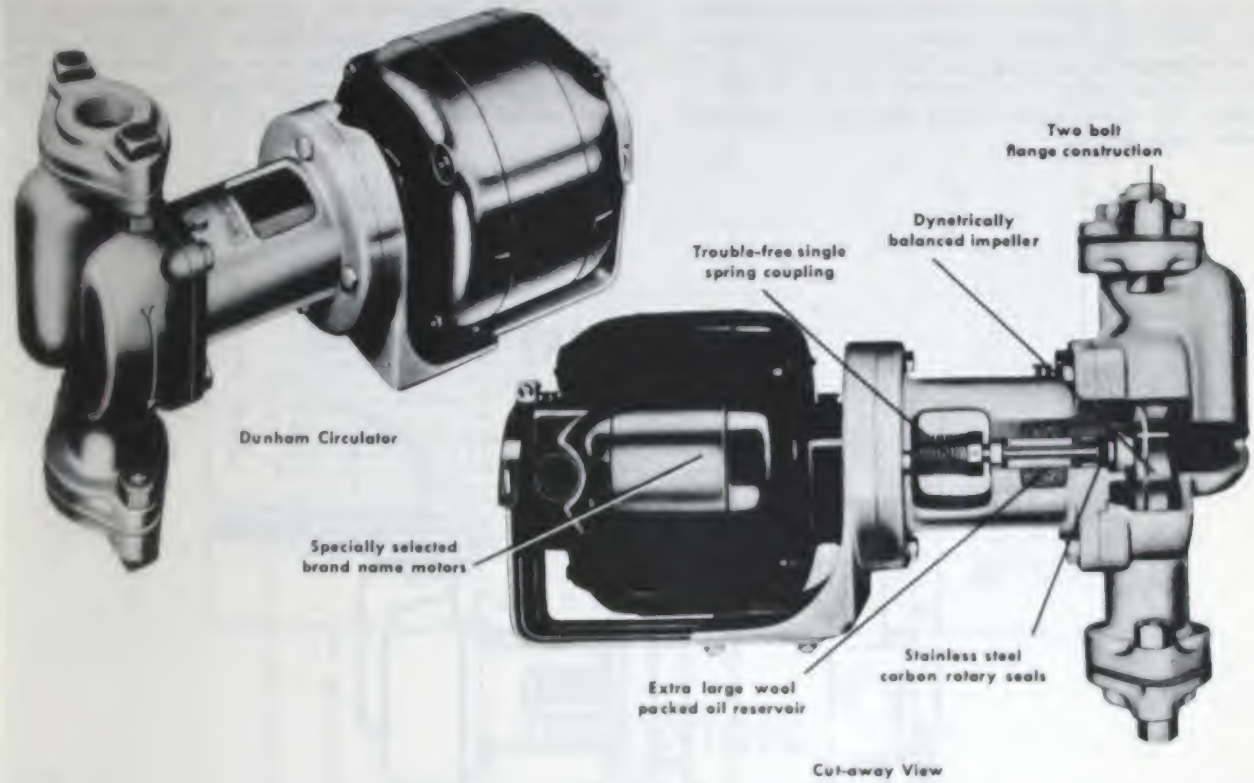
SPECIALTIES SECTION

File No. 1563

HORIZONTAL CIRCULATORS

Types C5A, C6A



Cut-away View

APPLICATION

The Dunham Circulator may be installed on all water heating or cooling systems. Standard and high head capacity models give full coverage of heating and/or cooling design requirements.

FEATURES

POROUS BRONZE BEARINGS

An extra large wool packed oil reservoir provides constant flow of oil to the long lubricating and aligning surface of the porous bronze Oilite bearing.

SPECIALLY SELECTED MOTORS

Only the finest nationally advertised and accepted brand name motors are used on Dunham Circulators. Each motor is carefully balanced and mounted in live rubber to guarantee vibrationless operation. Particular attention has been given wiring and electrical characteristics which result in highly efficient performance. Built-in automatic overload protection is standard.

ROTARY SEAL

All Dunham Circulators have field replaceable precision-ground stainless steel and carbon rotary seals. Weep hole construction prevents any water contamination of bearing lubricating section.

BALANCED ONE PIECE IMPELLER

The individually, dynetrically, balanced impeller used in Dunham Circulators assures vibrationless operation at full rated capacities. Impeller shafts are ground and polished hardened stainless steel. Dunham C5 Circulators have cast iron open type impellers; Dunham C6 high head Circulators have cast bronze closed type impellers.

FEATURES

SINGLE SPRING COUPLING

The Dunham Circulator coupling is especially designed to form a flexible union between the motor and pump impeller. A single tempered spring design absorbs the shock of the motor starting torque and dampens sound and motion transfer. The single spring design eliminates troublesome service requirements.

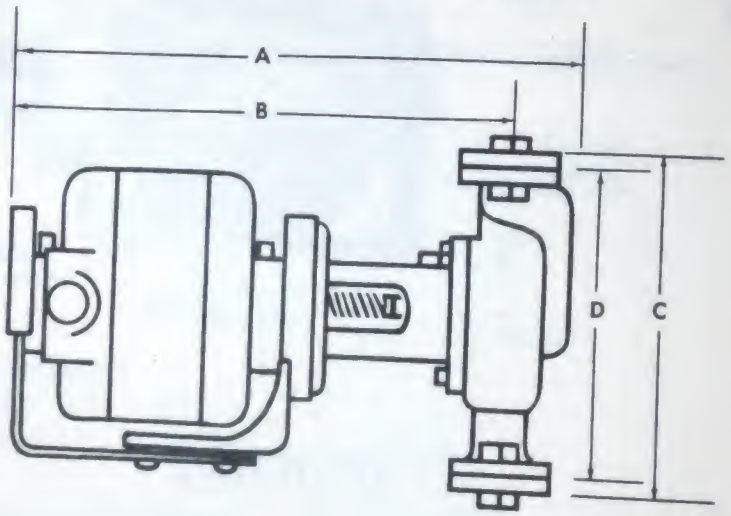
ADAPTABLE TO UNIVERSAL INSTALLATION

Dunham Circulators may be installed in either supply or return piping in either horizontal or vertical pipes and in any position that leaves the motor shaft horizontal. The two-bolt flange construction eases installation alignment and reduces labor time.

SIMPLIFIED SERVICE

Dunham Circulators are easily serviced in the field. Simplicity of design makes all parts readily accessible.

DIMENSIONS AND WEIGHTS



CAT. NO. & SIZE	MOTOR—60C-AC+ 1725 R.P.M.	A	B	C	D	APPROX. SHIPPING WEIGHT
STANDARD C5A5–¾", C5A6–1", C5A7–1¼", C5A8–1½"	⅛ HP–110 VOLT	16"	14"	9¾"	7½"	40 LBS.
C5A9–2"	⅙ HP–110 VOLT	17"	14½"	13"	11"	58 LBS.
HIGH DUTY C6A5–¾", C6A6–1", C6A7–1¼", C6A8–1½"	⅛ HP–110 VOLT	16¼"	14"	10¾"	8½"	45 LBS.
C5A11–3"	⅓HP–110/220 VOLTS	21 3/16"	17⅞"	15⅝"	13"	125 LBS.

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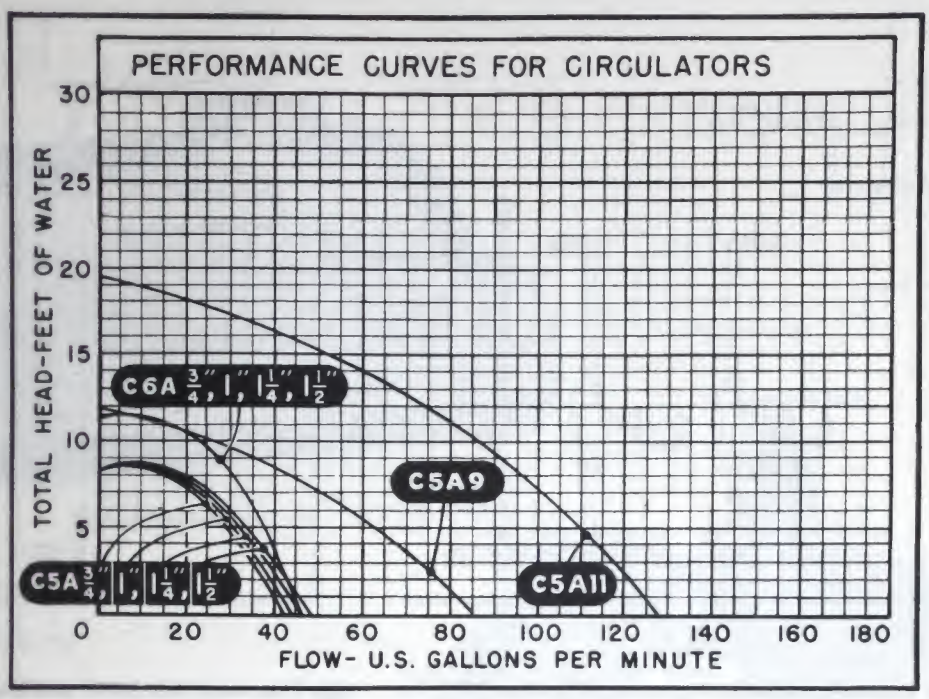
CIRCULATOR PERFORMANCE CURVES



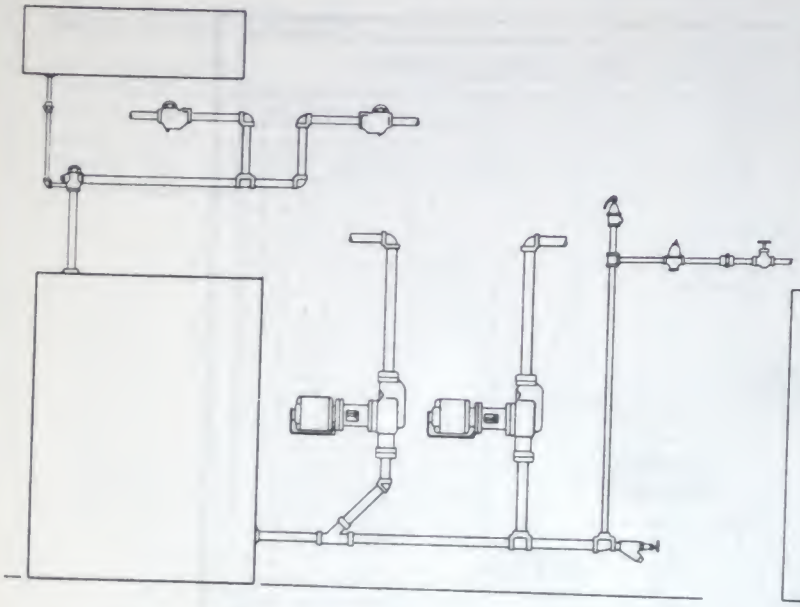
SPECIFICATIONS

FEATURES	CAT. NOS. AND SIZES (Inches)			
	Standard C5A5–¾, C5A6–1, C5A7–1¼, C5A8–1½	High Duty C6A5–¾, C6A6–1, C6A7,–1¼ C6A8–1½	C5A9–2	C5A11–3
Flanges	2 Bolt—Cast Iron*	2 Bolt—Cast Iron*	2"—4 Bolt—Cast Iron	3"—4 Bolt—Cast Iron
Body	Cast Iron	Cast Iron	Cast Iron	Cast Iron
Impeller—Dynetrically Balanced	Cast—Open Type	Cast Bronze—Closed Type	Cast Bronze—Closed Type	Cast Bronze—Closed Type
Rotary Seals	Carbon & Stainless Steel	Carbon & Stainless Steel	Carbon & Stainless Steel	Carbon & Stainless Steel
Large Oil Reservoir	Packed with Wool Waste	Packed with Wool Waste	Packed with Wool Waste	Packed with Wool Waste
Motor—Selected for Quietness**	Rubber Mounted—Overload Protected	Rubber Mounted—Overload Protected	Rubber Mounted—Overload Protected	Rubber Mounted—Overload Protected
Drive Coupling	Flexible Steel Spring	Flexible Steel Spring	Flexible Steel Spring	Flexible Rubber
Oilite Bearing	Porous Bronze	Porous Bronze	Porous Bronze	Porous Bronze
Stainless Steel Shaft	Super-Finished	Super-Finished	Super-Finished	Super-Finished

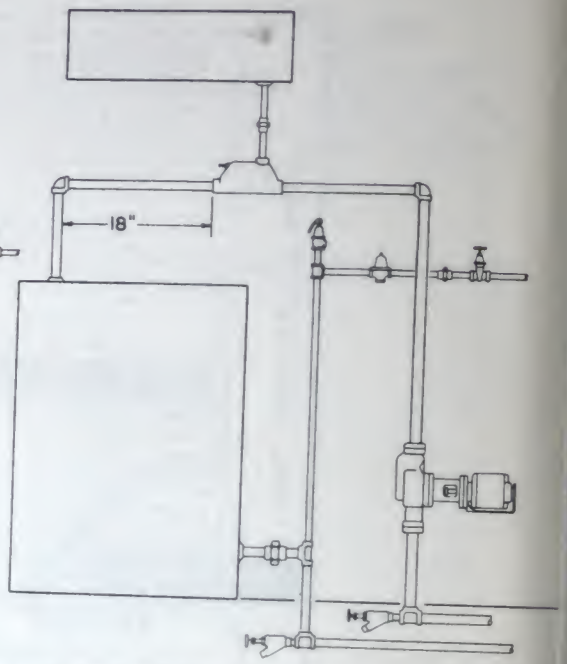
*Interchangeable ¾", 1", 1¼" or 1½" flanges—Circulator itself has full 1½" capacity.
**For motor characteristics see DIMENSIONS AND WEIGHTS TABLE.
Note: All Dunham Circulators are shipped with cast iron body, bracket and flanges.

File No. 1563
JAN./55

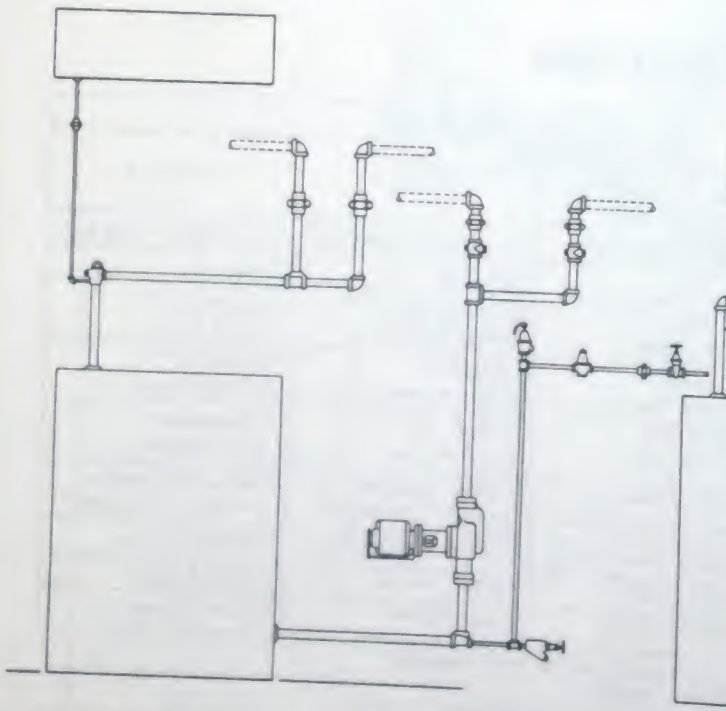
TYPICAL INSTALLATIONS



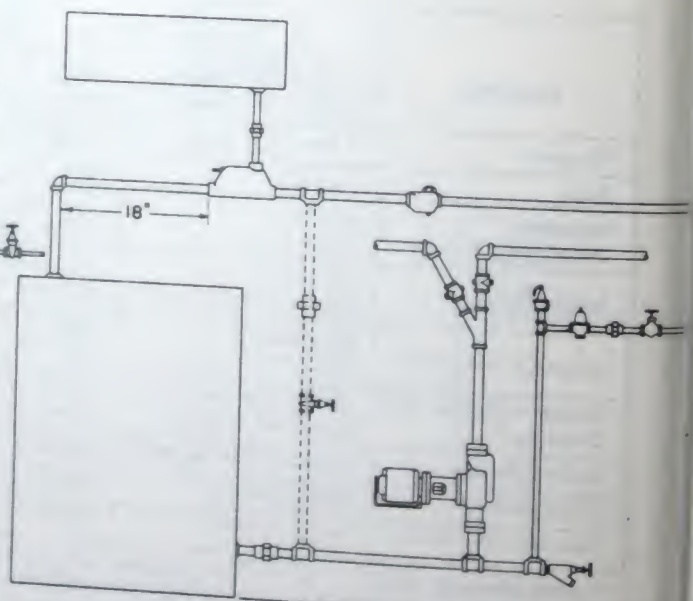
Typical Two Zone Forced Flow System with Dunham Circulator.



Single Zone Forced Flow System with Dunham Circulator. Main can b
level with, or lower than Boiler.



Typical Piping and Equipment to Convert Gravity System to Forced Flow System with Dunham Circulator.



Single Zone Forced Flow System with Dunham Circulator.

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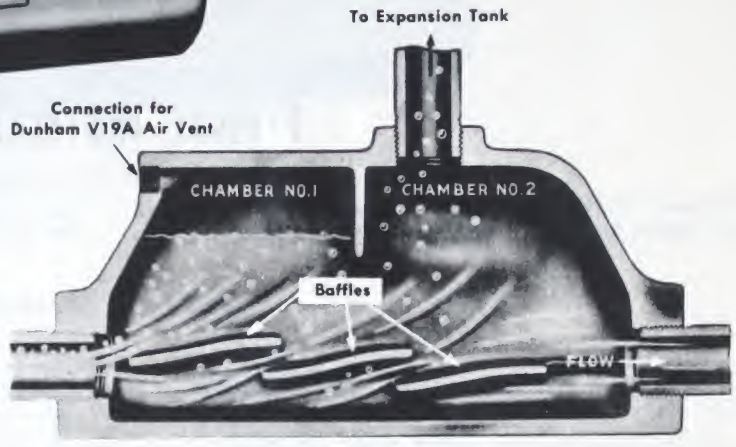
SPECIALTIES SECTION

AIR SEPARATOR

File No. 1565

Type A4A

Dunham Air Separator



Cut-away View

APPLICATION

Dunham Air Separator automatically and positively removes air from forced hot water heating systems. Air Separator performs the dual function of passing air from the system into the expansion tank to act as an air cushion and also exhaust the remaining excess air from the system through the Dunham Air Vent connected to the Separator.

FEATURES

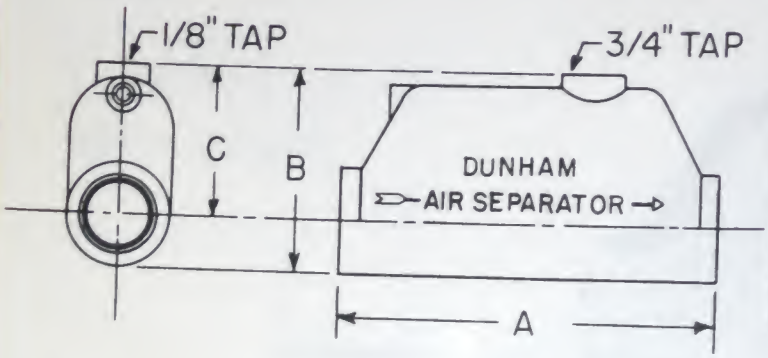
ONE-PIECE CONSTRUCTION—Dunham Air Separator is a heavy, one piece iron casting that will not corrode. The three diverting baffles that separate the air from the water are integral parts of this one-piece casting.

SIMPLE, AUTOMATIC OPERATION—The hot water, together with entrained air, enters the Air Separator from the boiler. The three baffles in the Air Separator are scientifically positioned to create the required amount of turbulence necessary to cause the air to separate from the water and rise to the top portions of the Separator. The first baffle causes air bubbles to rise and accumulate in the first chamber as shown in the above photo. From here it is removed from the system by the Dunham Air Vent. The second and third baffles cause the remaining air bubbles to pass up and into the expansion tank.

POSITIVE VENTING—After the system is first filled, vent the radiation and high points. The Dunham Air Separator eliminates call backs by diverting released air to the expansion tank before it reaches the piping system, convectors, baseboard or radiant coils.

PROTECTS AGAINST AIR RE-ENTRY—In case air completely fills the expansion tank and attempts to back down into the Air Separator and the system, it will be removed by the Air Vent without disturbing the system operation.

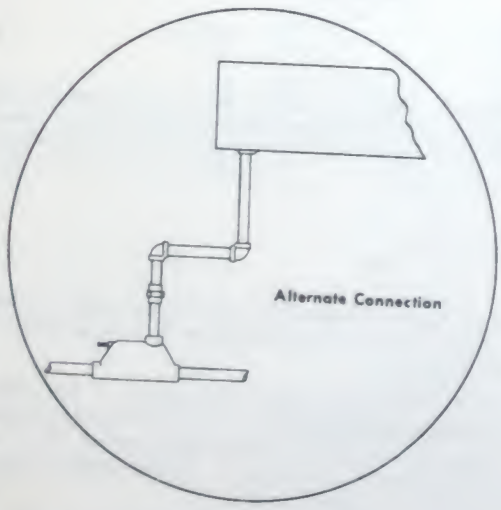
DIMENSIONS & WEIGHTS



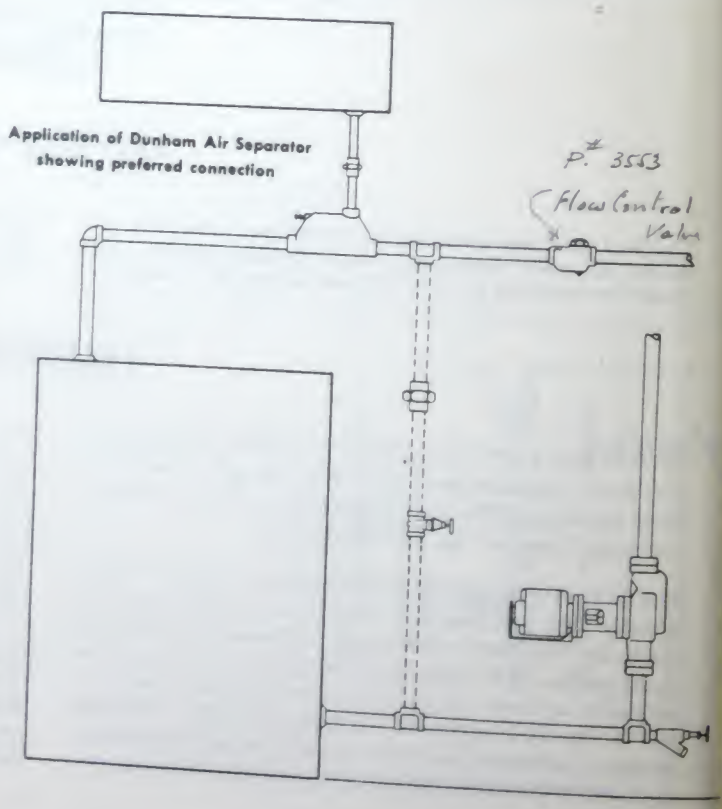
CAT. NO.	DIMENSIONS IN INCHES SIZE	A	B	C	APPROX. SHIPPING WEIGHTS
A4A5	¾	9¼	4½	3¾	6½ LBS.
A4A6	1	9¼	4½	3¾	6½ LBS.
A4A7	1¼	10	5⅜	3 13/16	9 LBS.
A4A8	1½	10	5⅜	3 13/16	9 LBS.
A4A9	2	11½	7	5	16½ LBS.
A4A10	2½	11½	7	5	16½ LBS.
MAXIMUM WORKING PRESSURE—30 P.S.I.					

TYPICAL INSTALLATION

Dunham Air Separator should be installed horizontally in the supply line about 18" from the vertical line as shown here. The expansion tank should be installed directly over the Air Separator as illustrated.



Application of Dunham Air Separator showing preferred connection



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DUNHAM **INSTALLATION INSTRUCTIONS**

SPECIALTIES SECTION

File No. 3550

AIR SEPARATOR

Type A4A

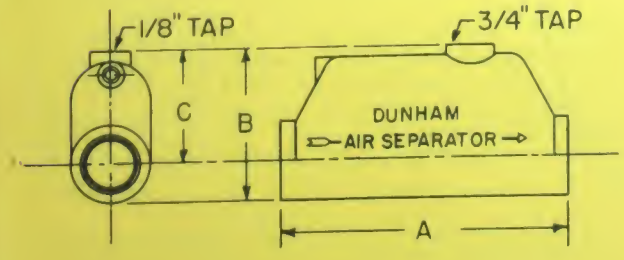
DUNHAM AIR SEPARATOR

HOW TO INSTALL

The Dunham Air Separator should be installed horizontally in the supply line approximately 18" from the vertical line and elbow. The expansion or air cushion tank should be installed directly over the Air Separator and connected with a short piece of pipe. (See Typical Installation Diagram on other side of sheet.)

When the system is first filled, all you have to do is vent the radiation and high points and the job is finished. The Dunham Air Separator eliminates call backs by diverting released air to the expansion tank before air reaches the piping system, convectors, baseboard or radiant coils.

ROUGHING IN DIMENSIONS



CAT. NO.	DIMENSIONS IN INCHES				APPROX. SHIPPING WEIGHT
	SIZE	A	B	C	
A4A5	3/4	9 1/4	4 1/2	3 5/16	6 1/2 LBS.
A4A6	1	9 1/4	4 1/2	3 5/16	6 1/2 LBS.
A4A7	1 1/4	10	5 3/8	3 13/16	9 LBS.
A4A8	1 1/2	10	5 3/8	3 13/16	9 LBS.
A4A9	2	11 1/2	7	5	16 1/2 LBS.
A4A10	2 1/2	11 1/2	7	5	16 1/2 LBS.
MAXIMUM WORKING PRESSURE 30 P.S.I.					

File No. 3550
Jan./55

DUNHAM

INSTALLATION INSTRUCTIONS

TYPICAL INSTALLATION

PREFERRED CONNECTION

C. A. DUNHAM CO., LTD.,
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SPECIALTIES SECTION

VARI-FLOW TEMPERATURE CONTROLS

File No. 1567

Types C7A, C8A, C9A, C10A

APPLICATION

Dunham Vari-Flow Controls can be used on all single or multiple zone hot water heating systems whether they are fired with oil, gas or coal. This control balances the heat output of the system with heat demand created by changes in outdoor weather.

FEATURES

FULLY AUTOMATIC CONTROL—Once Dunham Vari-Flow Control is installed and set, it requires no additional attention unless the building is to be left vacant for an extended period of time and lower heat input is desired.

MODULATED AND CONTINUOUS HEAT—Vari-Flow Controls are arranged so that during the heating weather (below 65°) a continuous flow of heat is provided to offset the continuous loss of heat from the building. A sensitive fluid filled bulb is located on the exterior of the building to measure the effect of outdoor weather changes. This bulb transmits this information to the central control panel. Similarly, a sensitive fluid filled bulb is installed in the hot water supply line of the heating system. This bulb also transmits its information, the water temperature in the heating system, to the central control panel.

As the outdoor temperature falls, the control panel actuates a switch starting the burner to obtain higher water temperatures in order to keep the system balanced and the proper amount of heat flowing into the building. As the outdoor temperature moderates, the control panel actuates the switch stopping the burner to obtain lower water temperatures to maintain the system balance.

The Dunham Circulator operates at all times when the outdoor temperature causes the Vari-Flow Controls to call for heat. So actually, changes in the heat output of the system are effected only by means of varying the water temperature in the heating system. The results are the most even heat possible, the most economical use of fuel possible and the most satisfaction to the user.

FULLY ADJUSTABLE—The Dunham Vari-Flow Control unit is easily adjusted to fit the exact conditions of the building in which it is installed. Four adjustments are made on calibrated dials that eliminate all dial setting guess work. First, it is necessary to determine at what outdoor temperature the heating system can be shut off. This is usually selected as 65°; but the calibrated dial permits a choice from 50° to 75° depending upon the particular building and its use. Second, the design temperature, on which the heating system is based, is set on a calibrated dial. This can range from plus 30° to minus 30° F.

The third dial permits a close setting of the minimum water temperature which should be maintained in the system as outdoor temperatures rise to the cutoff point (normally 65° F.). For example, when baseboard or convector radiation is used, this dial would probably be set at 85° F. In a radiant panel system, the minimum water temperature could be dropped to as low as 70° F.

A fourth setting is the number of degrees in the range of water temperatures from the minimum just described to the maximum that will be required at the design base temperature. For example, in a convector or baseboard job designed for 180° water at 0° F. outdoors, with a setting of 85° to minimum water temperature at 65° outdoors, the range setting would be at (180° minus 85°) 95°F.

SPECIFICATIONS

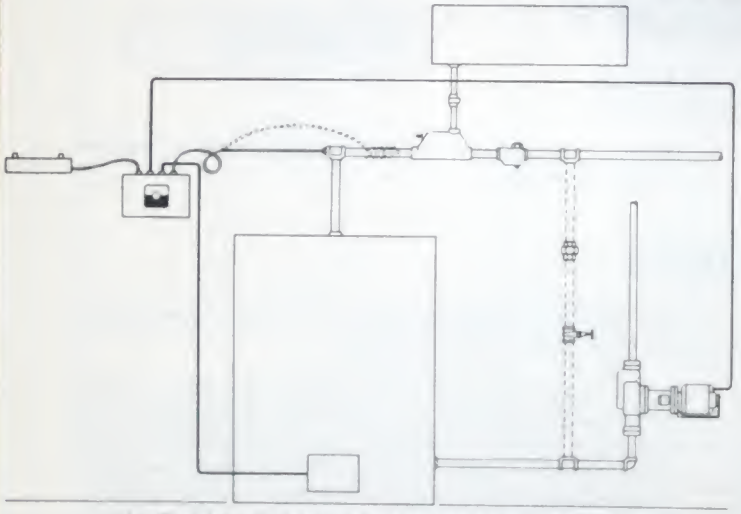
DUNHAM C7A VARI-FLOW CONTROL—This Indoor-Outdoor thermostat has a ½" x 8" liquid filled temperature bulb with a combination bracket and shield for outdoor installation. A second ½" x 8" liquid filled temperature bulb is furnished with a compression fitting with a ½" pipe thread suitable for insertion in the piping system. Both bulbs are connected to the metal control case by 10 ft. of ⅛" dia. capillary tubing. This capillary is available in lengths up to 100 ft. on special order. The control case is 8" long, 5½" high and 1½" wide. It is mounted indoors. In the control case, is a single pole double throw switch for controlling valve or burner action. Switch is UL Approved to carry a load of 125 volts A.C., 10 Amps. or ½ H.P. (1 Ph.) or 125 V.A. (Pilot Duty). Dialed adjustments, calibrated in actual temperature readings, are provided for varying the setting of the 65° cutoff, the Heating System design temperature, the minimum water temperature to be circulated and the system temperature rise. This is for hot water gravity circulating systems. Actual unit weight is 4½ lbs., shipping weight 5 lbs.

DUNHAM C9A VARI-FLOW CONTROL—This is similar to Model C7A except that the single pole single throw switch for controlling the circulator is included.

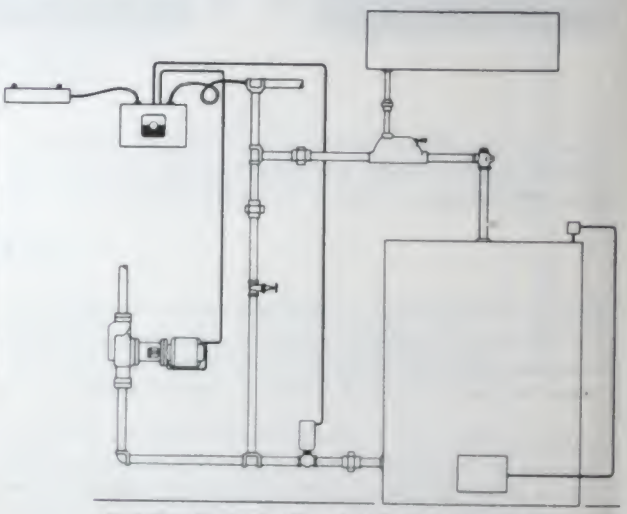
DUNHAM C8A VARI-FLOW CONTROL—This is similar to Model C7A except that a six foot length of 3/16" flexible copper tubing is substituted for the liquid filled system bulb. This tubing is to be wrapped tightly around a section of pipe of the heating system and covered. Good contact with the pipe is assured and control operation equal to that of an inserted bulb results.

DUNHAM C10A VARI-FLOW CONTROL—This is similar to Model C8A except that the single pole single throw switch for controlling the circulator is included.

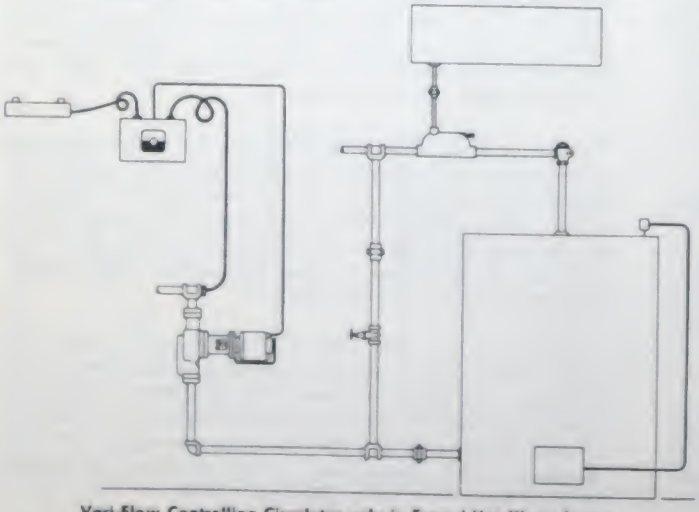
TYPICAL INSTALLATIONS



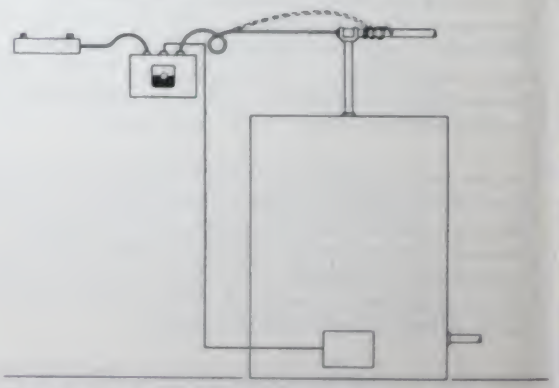
Vari-Flow Controlling Burner and Circulator in Forced Hot Water System



Vari-Flow Controlling Motorized By-Pass Valve and Circulator in Forced Hot Water System



Vari-Flow Controlling Circulator only in Forced Hot Water System



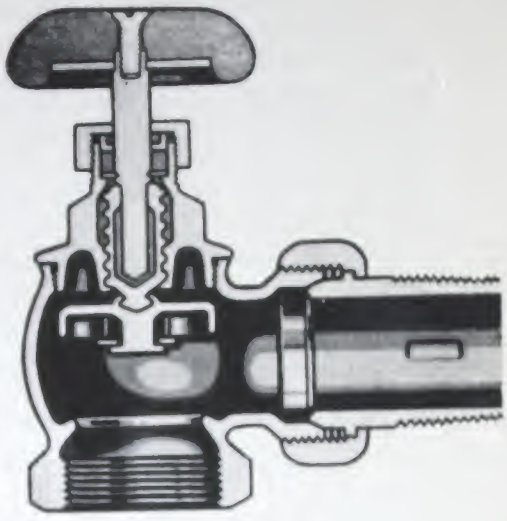
Vari-Flow Controlling Burner in Gravity Circulating Hot Water System

C. A. DUNHAM CO., LTD.
TORONTO, ONTARIO
Printed in Canada

SPECIALTIES
File No. 1526

RADIATOR VALVE
Packed Stem, No. 600

RADIATOR VALVE, NO. 600



SECTIONAL VIEW

APPLICATION

The Dunham Packed Stem, Radiator Valve, No. 600 is applicable to steam or hot water heating systems with pressures up to 60 lbs.

It offers a positive "on" or "off" control for any type of heating element or radiator. Heavy packing nut keeps packing tight around valve stem.

FEATURES

1. Simple, rugged construction. Valve is equipped with a heavy brass union nut and nipple capable of resisting severe strains often encountered during installation. Valve body and bonnet are cast brass.

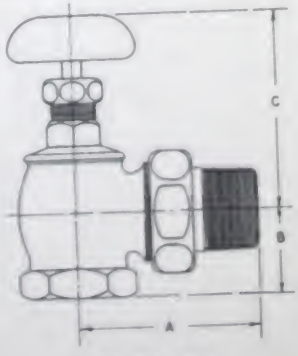
2. Tight seal around valve stem. Heavy packing nut exerts pressure on a solid, one-piece, graphited asbestos packing ring to provide a tight seal around valve stem.

3. Simplified styling. Attractive one-piece handle and non-rising stem make valve desirable for installation in exposed locations.

DIMENSIONS AND WEIGHTS

DIMENSIONS				SHIPPING WEIGHT (LBS.)
SIZE	A	B	C	
1/2"	2-3/8"	1-1/16"	2-11/16"	1-1/4
3/4	2-13/16"	1-1/4"	2-13/16"	1-1/2
1"	3-1/16"	1-7/16"	3-7/16"	2
1-1/4"	3-7/16"	1-5/8"	3-9/16"	2-1/2
1-1/2"	3-13/16"	1-7/8"	3-7/8"	3-3/4
2"	4-3/8"	2-1/4"	4"	5-3/4

WHEN ORDERING OR SPECIFYING, INDICATE: (1) Valve Number and (2) Size



NO. 600 VALVE
(Angle Pattern Only)

FILE NO. 1526
JAN./55

REPLACES FILE NO. 3M-2-1
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TORONTO, ONTARIO.
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